The Efficacy of Tranexamic Acid for Reducing Blood Transfusion Rates in Extracapsular Hip Fractures

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BACKGROUND

- Perioperative blood loss is a common complication of hip fractures, with transfusion rates reported between 19-68%.
- Extracapsular fractures have greater blood loss than intracapsular fractures.
- Blood transfusions are associated with increased complications.
- Tranexamic acid (TXA) is an antifibrinolytic agent used to reduce perioperative blood loss inhibiting fibrinolytic activity preventing fibrin degradation.

OBJECTIVES

- Does a single dose of TXA at the time of admission decrease postoperative blood transfusion rates and reduce preoperative blood loss?

METHODS

- Double-blind randomized controlled trial approved by local IRB.
- Patients with closed intertrochanteric or subtrochanteric femur fractures undergoing intramedullary nailing were randomly allocated to receive either 1 gram TXA or normal saline.

RESULTS

**Results: Blood Transfusion**

- 17.5% of TXA group (7/40) and 36.7% of placebo group (18/49) received a blood transfusion (p=0.046).
- Relative risk of blood transfusion was lower in the TXA group compared to placebo (Relative Risk = 0.48, 95% CI 0.22-1.03).

**Results: Total blood loss (ml)**

- Calculated using the hemoglobin dilution method.
- There was no significant difference in blood loss between groups (Mean difference 367 ml, 95% CI 76-657, p=0.01).

<table>
<thead>
<tr>
<th></th>
<th>TXA (n=30)</th>
<th>Placebo (n=35)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total blood loss (ml) Mean (SD)</td>
<td>1,182.8 (337)</td>
<td>1,284.4 (347)</td>
</tr>
<tr>
<td>Min, Max</td>
<td>227.3, 3,513.0</td>
<td>290.9, 3,508.6</td>
</tr>
</tbody>
</table>

**Estimated surgical blood loss**

- No significance in surgical blood loss between groups (p=0.92).

- Time from TXA administration to surgery varied anywhere from 23 minutes to 21 hours.
- This led to concern that patients who received the TXA within 3 hours of surgery may have had an additional effect on intraoperative blood loss.
- Subgroup analysis was performed to assess the effect of TXA when administered at least 3 hours prior to surgery.

- No significant differences between groups in patient demographics.

<table>
<thead>
<tr>
<th>TXA (n=13)</th>
<th>Placebo (n=16)</th>
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<tbody>
<tr>
<td>Event Odds</td>
<td>1.57 (0.42)</td>
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<tr>
<td>P Value</td>
<td>0.001</td>
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</tbody>
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**Subgroup Analysis Results**

- 15.2% of TXA group (3/33) and 40.8% of placebo group (13/32) received a blood transfusion (p=0.02).
- Relative risk of blood transfusion was significantly lower in the TXA group compared to placebo (Relative Risk = 0.38, 95% CI = 0.16-0.92).

**FUTURE IMPLICATIONS**

- Results of this study have led to a change in practice at GSRMC.
- All patients now admitted with a hip fracture receive 1g TXA at admission.

**REFERENCES & ACKNOWLEDGEMENTS**

- All of the references are available upon request or can be found with the full manuscript.
- We would like to thank all of the orthopedic residents who reviewed patient inclusion criteria and consented all of these patients in order to make this project a reality.
- Thanks to the research department for data analysis.